DEFENSE SYSTEMS MANAGEMENT SCHOOL

PROGRAM MANAGEMENT COURSE
INDIVIDUAL STUDY PROGRAM

THE IMPACT OF ENVIRONMENTAL REGULATION ON DEFENSE SYSTEM ACQUISITION MANAGEMENT

STUDY PROJECT REPORT
PMC 76-1

James L. Graham, Jr.
Major USAF

FORT BELVOIR, VIRGINIA 22060

THE IMPACT OF ENVIRONMENTAL REGULATION ON DEFENSE SYSTEM ACQUISITION MANAGEMENT

Study Project Report

Individual Study Program

Defense Systems Management School

Program Management Course

Class 76-1

by

James L. Graham, Jr.
Major USAF

May 1976

Study Project Advisor
Mr. Wayne Schmidt

Executive Summary

The advent of environmental protection legislation and subsequent governmental regulation has had an impact on nearly every segment of the United States. Of particular interest to this report is the effect of such regulation on the defense system acquisition process. There is a direct impact on the defense system program management office, and also on the industrial contractors and subcontractors that play a role in weapon system acquisition.

This report presents and discusses some of these regulations, outlines several examples of actual program experiences, and discusses potential impacts and ways to minimize their effect. It is concluded that the impact of environmental regulations is a significant factor that should be considered by defense system program managers as early in the program as possible. Impacts on industry have been heavy, due to the capital expenditures required for pollution abatement. Termination of production has been necessary in certain cases because of the polluting effect of the product. This report recommends further study on the effects of environmental regulation, and several avenues of study are proposed.

TABLE OF CONTENTS

SECTION I

INTRODUCTION

Setting

The United States has entered a time of increased consciousness of its environment and the effect of outside influences on that environment. The troublesome problems of pollution that have accompanied man's progress in the fields of technology and economic development are demanding attention, and solutions to these problems do not come easily. The era of unrestrained waste and unconcern for the consequences of production is gone in the United States. Instead, we find a heightened awareness of the need for moderation, a need to end the free and easy expenditure of energy and resources on heretofore essentially "throwaway" goods.

There has been a strong movement to protect natural resources, preserve the beauty and utility of the Earth, and retain for future generations the quality of life we have come to expect. At the forefront of this movement have been such organizations as the Sierra Club, Common Cause, and literally dozens of other groups, most of which are non-profit lobby groups with the intent to educate the public and assure progress in maintaining or restoring environmental quality (21).[1]

However, to characterize the environmental movement as consisting primarily of lobbyists representing a narrow segment of society would be

[1]This notation will be used throughout the report for major references. The first number is the source in the bibliography. If the source is a page-numbered document, the second number is the page number.

erroneous. It is a measure of the success of these groups to note the very widespread and deep concern in environmental areas being voiced by the public. This is reflected in many of the indicators of popular opinion, such as the election of representative officials, letters to the editors of magazines and newspapers, polls, and the results of bond issues, referendums, and zoning questions. Clearly, the need for maintaining or restoring the delicate ecological balance in the environment is one of the leading issues of the time. Its economic, sociological, and technological ramifications are being felt now, and the future will more than likely see even more intense scrutiny, legislation, and control.

Purpose and Scope of the Study Report

The concerns of the defense system program manager within this complex setting are the subject of this report. Some of the applicable environmental laws and regulations will be cited and illustrated through examples of their economic and management consequences. The goal of this report is to heighten understanding of the broad scope of environmental regulation, and make a strong case for early and continual awareness of environmental considerations in the acquisition of defense weapon systems.

Organization of the Report

Section II of this report discusses the background of environmental regulation, both from the contractor and DOD viewpoint. Section III will highlight some of the Federal directives and regulations that have an impact on defense system acquisition management. Section IV will provide

a discussion of these impacts, with examples of potential problems that a program manager might expect in the course of managing the development and production of a major weapon system. Actual DOD and contractor experiences will be sampled to provide a cross section of typical environmental actions that have involved defense system acquisitions. Section V will contain conclusions and recommendations. An Annotated Bibliography provides brief narrative data on each reference source for any future follow-on investigations.

Limitations of the Report

The extensive quantity of data available on the subject of environmental protection, pollution abatement, and the economics of compliance make a thorough analysis of available data difficult or impossible, particularly within the scope of a study project such as this. Therefore, data presented and conclusions drawn will be on a sample basis rather than being exhaustive in nature. It is hoped that this initial research will generate interest and follow-on work in the area of environmental policy relating to defense system acquisition.

SECTION II

BACKGROUND

General

After enactment of the National Environmental Policy Act (NEPA) of 1969 (to be discussed in Section III), the government of the United States moved to bring together in a single agency the major federal environmental control programs. On 9 July 1970, President Nixon sent to Congress a reorganization plan which removed 15 existing units from their old organizations and agencies, relocating them in a new independent agency. On 2 December 1970, the reorganization became effective, and the United States Environmental Protection Agency (EPA) was formed (14) (12:1).

Creation of the EPA was a significant milestone in the environmental movement. While some notable progress had been made in previous years on regional problems such as smog, it had become more and more clear that local ordinances would be unable to adequately cope with the broad problems that were developing. Important to the average public citizen were the everyday problems of auto exhaust fumes, unhealthy and unsanitary open dumps, untreated sewage, and the potential hazards of many chemical products with unknown impacts on general health and welfare.

To deal effectively with such a broad spectrum of problems, EPA transformed the approach to a broad, national, and cohesive effort. Congress provided EPA with substantial and far-reaching powers to carry out its responsibilities. The mission of EPA is to control and abate pollution in the basic areas of air, water, solid waste, pesticides, noise, and

radiation. Although EPA's basic authority was contained in the establishing Presidential directive, Congress subsequently increased this authority with the Clean Air Amendments and the Resource Recovery Act in 1970, and several additional legislative acts in 1972 and 1974 (14).

EPA is based in Washington, D. C., and has ten regional offices and numerous laboratories and support facilities around the United States. In addition to its normal operating outlays (an estimated $3.079 billion in 1976) (4:732), EPA administers a grant program to construct wastewater treatment facilities in support of local pollution control. Between 1972 and the end of FY 1977, EPA will commit almost $18 billion in federal funds to assist in local clean water facility construction, making this one of the largest public works programs in the Nation. The agency has numerous personnel engaged in research and development in the various areas of its basic mission. At the same time, EPA has pursued vigorous enforcement action against polluters. Between its establishment in 1970 and the end of 1974, EPA carried out over 6200 enforcement actions against pollution violators, with penalties and fees totalling over $9 million (14).

Cleaning up the environment has not been cheap, nor will it ever become so. In spite of this, the expenses can often be offset by immediate benefits. EPA data shows that the damage of approximately $11.2 billion each year from sulfur oxide and particulates is more than twice that needed to control them (14).

EPA has documented improvements already in the battle for a cleaner environment. Particularly, carbon monoxide, sulfur oxides, and particulates have been reduced significantly. Water quality has been improved,

and several pesticides have been banned. Municipal trash recovery is progressing satisfactorily, and noise standards are being vigorously pursued.

All these efforts, by the public, by lobby groups, by Congress, and by the Executive Branch, have had a definite economic impact. In some cases, the impact has been positive, such as in the wastewater grant program. Other areas appear to have a negative economic impact, most particularly on the companies or municipalities that must comply with the established standards.

The most certain factor in the situation is that progress will not be made without strong and persistent effort, nor without expense to the parties involved, right down to the taxpayer/consumer. Yet no less certain is the need to move ahead vigorously on the program, and that is EPA's main thrust at this time.

The Department of Defense (DOD)

The Defense Department has broad concerns in the area of environmental protection; a significant volume of resources, personnel, and programs are being applied in this area. This paper, however, will investigate environmental regulations only as they apply to the general area of defense system acquisition management.

The development and production of defense weapon systems is primarily oriented toward dealing directly with a prime contractor, or in some cases, several associate contractors. On major systems, these contractors for the most part will be medium to large aerospace-type contractors,

which in turn subcontract many of the work requirements of their particular projects. These prime and associate contractors typically experience some impact on their operations from environmental regulation. But it is on their subcontractors, and in turn on their sub-subcontractors, that the most rigorous impacts are found. These are generally the more basic heavy industries, such as raw materials, petro-chemicals, metals, and other similar industries. These are the industries that could be called "pollution-intensive," and it is they that receive much of the brunt of the regulation and control now being applied through EPA efforts (25) (26).

SECTION III

REGULATION

This section outlines some of the environmental acts, regulations, and directives that apply to defense system acquisition.

A. The National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) was enacted on 1 January 1970. It has since become a significant "action-forcing" mechanism, insuring that Federal decision-makers consider environmental aspects of various projects and proposals (6:1). Title II of the Act established the Council on Environmental Quality (CEQ), for the purpose of advising and assisting the President in the area of environmental quality. The CEQ is to (1) study the condition of the nation's environment, (2) develop new environmental programs and policies, (3) coordinate the wide array of Federal environmental efforts, (4) see that all Federal activities take environmental considerations into account, and (5) assist the President in assessing environmental problems and in determining ways to solve them (6:12).

In addition, the CEQ is a recipient of the Environmental Impact Statements (EIS) required by Section 102 of the NEPA. The EIS is a significant vehicle in assuring that environmental considerations have in fact been addressed in the early stages of a project (16). The importance of the EIS to the acquisition manager is a subject that will be covered in some detail in Section IV of this report.

The impact of NEPA is such that a copy of the act has been included in this report (Appendix A). Rather than undertaking an exhaustive

analysis of the act in the body of this report, it is included in full for reference and more detailed study if desired.

B. The Clean Air Act (CAA) of 1970 (PL 91-604) established national standards for sulfur oxides, carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter being released into the atmosphere (17:1). This act applies across the board to Federal, State, and local levels. While emission standards are of concern to the DOD over a broad range of pollution sources, defense acquisition management might be more specifically involved in areas such as by-products of fuel oxidation, whether exotic rocket fuel, gasoline, fuel oil, or jet fuel.

An interesting outgrowth of the CAA is the interpretation that it bars degradation of air quality in so-called "clean-air areas." By virtue of a 1972 decision of the District Court of the District of Columbia, EPA was ordered to promulgate regulations that prevent such "significant deterioration." The impact of this is that "clean air areas" will have an even greater level of pollution control stringency applied to new industry being located there (13). A selected cross-section of industries most heavily regulated by clean air standards (pollution-intensive industries) might include:

(1) Fossil-fueled steam electric plants

(2) Primary zinc smelters

(3) Iron and steel mills

(4) Aluminum ore reduction plants

(5) Primary copper smelters

(6) Sulfuric acid plants

(7) Petroleum refineries

(8) Fuel conversion plants

(9) Ferroalloy production facilities (13)

EPA intends that regulation should permit both protection of clean air and national economic growth. The growth that occurs however will be well-planned, orderly, and in keeping with the best technology available to overcome pollution sources. The regulations do permit State and local flexibility in deciding where growth will take place or be prohibited; State and local governments may request reclassification of areas into either higher or lower air quality designations, thereby changing the rules that will apply to the area (13).

Section 309 of the Clean Air Act authorizes EPA to review and comment in writing on the environmental impact (pertaining to clean air) of (1) legislation proposed by a Federal department or agency; (2) newly authorized Federal projects for construction and any other major Federal action other than those already covered by the NEPA and the EIS requirement; and (3) proposed regulations of any Federal department or agency (17:3).

This Section 309 review ties in with the Environmental Impact Statement review process being accomplished by EPA. Both reviews are carried out simultaneously whenever possible.

C. The Federal Water Pollution Control Act (FWPCA) of 1972 (PL 92-500) and its amendments require that effluent limitations be established for all point sources of water pollution. The best practicable wastewater control technology will be applied by 1 July 1977; the best available

technology economically achievable will be applied by 1 July 1983. The ultimate goal is to eliminate discharge of pollutants into navigable waters by 1985 (12:13).

A typical water pollution consideration in weapon system development is determining the toxicity of substances that might be discharged or released from a system, and their solubility in water. Another consideration is the potential release into the water environment of hydrocarbon products (oil, gasoline, etc.), thereby covering the water surface, preventing oxygen transfer, and coating the feathers of aquatic birds and the gills of fish.

Although EPA administers the act, it is intended that States eventually will issue the permits associated with the new controls. Many States already have this authority (4:65). The EPA will continue to administer the program as it applies to Federal facilities and agencies.

D. The Solid Waste Disposal Act (SWDA) as amended by the Resource Recovery Act (RRA) (PL 89-272 and PL 91-512 respectively). These acts involve guidelines applicable to Federal, State, regional, and local agencies, to further the improved handling, collection, separation, recovery, and disposal of various solid waste products (17:31).

E. The Marine Protection Research and Sanctuaries Act (MPRSA) of 1972, and the Oil Pollution Act (OPA) (PL 92-532 and PL 93-119 respectively). The former act stringently controls the dumping of various chemical, biological, and radiological materials at sea. It particularly prohibits dumping within the 12 mile limit, and applies strict criteria for dumping into ocean waters under conditions that will not degrade human health,

welfare, or amenities, nor the marine environment. The latter act applies to the release of oil and related substances from US ships underway at sea (17:24).

F. The Noise Control Act (NCA) of 1972 (PL 92-574) required standards to be set for such products as construction and transportation equipment (except aircraft), motors and engines, and electronic and electrical equipment. EPA was required to develop and publish information on allowable limits of noise for protecting public health and welfare. A comprehensive study of aircraft noise, sonic booms, and regulations to control them was directed (17:30) (15).

G. Executive Orders of the President. Executive Order 11514, 5 March 1970, "Protection and Enhancement of Environmental Quality," was issued to implement the provisions of NEPA. It further delineated the responsibilities of Federal agencies, and specifically the Council on Environmental Quality. It amended an earlier executive order on the environment, to make it consistent with evolving policy and terminology. This executive order (and others pertaining to the environment) may be referred to in order to develop a more complete understanding of the President's formal position and the techniques used in applying the law. Details are not however enumerated in this report, since there are a large number of executive orders covering practically every aspect of environmental concern (4:689) (17:4, 7, 53, 55, et al).

SECTION IV

DISCUSSION OF IMPACTS

A. Department of Defense

The Department of Defense is very much impacted by environmental regulation, and the following DOD directives apply to various phases of environmental policy:

DODI 4120.14	Air and Water Pollution Control
5030.51	OMB Coordination of Proposed Issuances on Environmental Quality, Consumer Protection, and Occupational and Public Health and Safety
5100.50	Protection and Enhancement of Environmental Quality
6050.1	Environmental Considerations in DOD Actions

Of some significance in the area of system acquisition is the EIS, or Environmental Impact Statement. The EIS is a requirement of Section 102 of the National Environmental Policy Act (NEPA), and must be submitted for all "major Federal actions significantly affecting the quality of the human environment." Because the language is general, and it is the intent of DOD to meet the spirit of NEPA as well as the letter, it is necessary to do preliminary work to determine if an EIS will be required. This work is called an Environmental Impact Assessment, and is required to be performed over a broad range of project types. If at any time it is determined that an EIS will be required, the assessment can generally

be discontinued and work on the EIS should begin at once; otherwise the assessment is completed, filed, and kept current in the project records for use if necessary (22:29). The EIS is forwarded through established service channels, and in cases where all criteria are met, the EIS is filed with the Council on Environmental Quality (CEQ), with copies going to various other agencies, including the EPA. The CEQ has promulgated guidelines for preparation of Environmental Impact Statements. These are lengthy instructions, formally codified into law, and readily available to Federal activities and the general public (4:692).

From the experience of the services it is almost impossible to "blueprint" an EIS because of its wide content variation from project to project. In some cases, multiple impact statements will be required. For example, the Trident submarine project required an EIS for the reactor, the missile, the submarine hull, the turning basin, and the refitting base. The Trident project also raised another interesting question, pertaining to when to file an EIS. The Office of Management and Budget (OMB) prohibits announcing a project in public, i.e., submitting an EIS, until after the project has formally become part of the President's budget. Yet in order to become a part of the budget, siting questions involving the environment had to be tackled beforehand; when the refitting base site was announced (as Bangor, Washington), the question was raised as to whether the siting decision was made prior to filing an Environmental Impact Statement (22:4). (A lawsuit against the Navy was filed in connection with the siting of this refit base, because of the environmental considerations.) (10:928)

There is an overwhelming need for DOD personnel involved in projects with potential environmental impact to be imaginative in their approach

to the issues involved. It will help in the long run to be questioning, to think ahead, and to play the "devil's advocate" when it comes to environmental impact. Here are some guidelines from a Navy source:

(1) When in doubt, do an environmental assessment in the form of NEPA and keep a written record.

(2) Consider the environmental impact of proposed actions at an early stage of the decision making process. This will help satisfy both the spirit and the letter of NEPA.

(3) Obtain as much good and reliable data as possible so that your environmental assessments are rational and based on solid facts rather than speculation. . .

(4) Whenever possible use outside resources--Federal and State agencies and private environmental groups. Although these people are sometimes critical of what we do, they are our natural allies in many cases, especially when there is a conservation element in our proposed project of activity. At the very least, if they become involved, many of them will become less critical of what we are doing. They will have a fuller understanding of our problems, and they will recognize that we are making a sincere effort to include environmental factors in our decisionmaking process.

(5) Let the public know about a proposed project as soon as possible. You cannot announce a project that is [not] in the President's budget, but you can give publicity to a base development plan. Early public notice of such plans can nip controversy in the bud, or at the very least will alert us to potentially controversial actions at a point in our planning process when we are not facing severe time constraints (22:5).

The armed services have attacked the environmental problems facing the DOD on many fronts. Some examples will make the point:

(1) The Air Force has spent considerable sums on converting the C-5A and C-9 aircraft engines to smokeless combustors, as well as the J-79

engine, for the F-4. Specifications for new aircraft such as the B-1, F-15, and F-16 call for smokeless engines. Besides the environmental "plus," smokeless engines also contribute to the difficulty of seeing (and intercepting) US aircraft (22:12). The Navy has been equally involved in the development and use of smokeless combustors (11:142).

(2) Noise suppression is of major concern to USAF planners, and in furtherance of this goal, the Air Force purchased 250 noise suppressors costing approximately $50 million for aircraft already in the inventory. Ground noise suppressors for the F-15 aircraft are included in the program procurement (22:12).

(3) The Army Corps of Engineers decided to abandon work on over a dozen projects because the EIS/environmental assessment process showed significant environmental damage would result. Eleven other projects have been stopped pending completion of environmental analysis (22:14).

(4) Research is continuing on emission controls for jet engine test cells. The Navy, for example, has tested a "nucleation scrubber" device for removing 98% of the particulate matter from engine test emissions. Complete success has not been achieved however due to the high cost of the unit, the secondary pollution of the "scrubbing" water, and the large water volume required (11:142).

(5) The Navy has spent considerable resources on research and development of shipboard sewage disposal systems. The design and performance constraints placed on the Navy in construction of vessels has had to be weighed against methods of properly handling, storing, and disposing of shipboard wastes. Development of self-contained units permitting discharge overboard has been difficult to say the least. Because of these

problems, the Navy decided to provide for collection, holding, and transfer systems beginning in FY 1973. The degree of change that these programs have effected can be appreciated by realizing that an aircraft carrier under the old direct discharge systems could have as many as 150 discharge hull penetrations. Another reason for the Navy moving to the holding tank concept is that it makes Navy ships insensitive to the pollution standards in effect at any given time. This means that if standards rise after a Navy ship has been built, the holding tank permits much greater flexibility in meeting those standards than if the ship were fitted with a complex sanitation system that could not meet the then-current discharge standards (11:143-145).

B. Defense Contractors and Subcontractors

Contractors and subcontractors, i.e., private industry, have the full spectrum of environmental impacts with which to cope. The following paragraphs outline some environmental considerations applicable to the private sector, and therefore having potential impact on defense system program management.

One of the most often heard complaints relating to private industry is that environmental regulation is strangling the small companies and bankrupting the larger ones. Both EPA and CEQ have done research on this subject because of the economic impact on the nation and on various parts of the country. Plant closings and curtailments are of some interest in this regard. Between January 1971 and June 1975, 75 plants were closed allegedly due, at least in part, to pollution abatement costs. These plants employed 13,600 persons (0.015 percent of the US working force) (4:536). The point should be made that such plant closings often occur because the environmental regulation adds "the last straw" to an already economically marginal state of business. Very small companies in particular tend to fall prey to this situation, due to mounting costs of government related administrative reporting, and competition encountered from larger, healthier, and more versatile companies. Small foundries are an excellent example. In order to comply with pollution regulations, a company must often invest heavily in pollution control devices. This uses up the funds that might otherwise go for productivity improvement, plant modernization, or other needed capital investments. Larger companies, more than small ones, can more likely absorb or cushion the effect of

this capital diversion from "traditional" uses to pollution abatement investment (26). As a matter of fact, CEQ and EPA analyses have indicated that, in the macro sense, the demands for pollution control funds will not seriously disrupt capital markets or displace significant amounts for capital expansion, although there may be some adverse impact on interest rates. Inflation rates are estimated to have increased 0.3 to 0.5 percent due to additional capital spending on the environment (4:539). Even the job cutbacks that do occur are minimized in that many of the dislocated workers are absorbed in other company plants or within the same industry. Slight overall reductions in the working force probably do occur due to the higher productivity per worker in the remaining newer plants, but this effect is felt to be minimal (4:536).

The economic and social impact of plant closures and cutbacks cannot be totally discounted however, nor can the effect on any one individual company. The effect on a program manager who finds that a subcontractor has suddenly ceased production is immediate and distressing. As a means of control, the EPA maintains surveillance over actual and projected plant closures and employee cutbacks with its Economic Dislocation Early Warning System. The results of this surveillance are provided quarterly to the Secretary of Labor (4:537) (26).

It is worth noting that seven major industrial categories, the so-called "basic industries," accounted for 75% of all private pollution control investments in 1973-74.* Five of the seven put more than 10% of all their plant equipment expenditures into pollution control during the

*(Nonferrous metals: pulp and paper; iron and steel; stone, clay, and glass; petroleum refining; chemicals; and electric utilities)

same period. These seven share some basic characteristics: their price and supply problems affect the entire economy; they are generally energy-intensive as well as pollution-intensive, and are therefore facing a multi-faceted problem as the costs of energy rise. Their problems are being watched closely by many agencies of the Federal government, because of the potentially extensive impacts they can have on the remaining industries (4:543).

For many of the reasons outlined above, plant expansion and new facility construction take on new shades of difficulty for private industry. With capital expenditures going to environmentally upgrade existing plants, the uncertainty of investing in a new facility could conceivably sway the decision away from expansion, at least temporarily (5:9). Another issue involves the technological uncertainty of pollution control devices. A corporate decisionmaker must certainly consider the potential capital loss if radically new pollution abatement equipment comes out within a few years after the decision to heavily invest in what had been adequate equipment (26). And a final, but related uncertainty relates to regulatory risk, i.e., the uncertainty that a given level of pollution abatement standards will be acceptable three or five years hence, either to the Congress or to Federal/State regulatory agencies (26). It is clear that environmental pollution abatement has had a major impact on corporate decisionmakers, and the ultimate direction they have moved their organizations. This effect will certainly not diminish in the foreseeable future.

C. The Program Manager

The Program Manager, or PM, is faced with many of the uncertainties previously mentioned in this report. They do not always appear however as clearcut, open problems. They can be submerged beneath the routine day-to-day problems and the not-so-routine crises that often afflict cost, schedule, and performance of the system. They may not, and in fact probably will not involve a prime contractor directly. Rather, a subcontractor (or sub-subcontractor) is probably more likely to be facing a crunch because of pollution control regulation (25). And because of the subcontractor's distance from the PM office (physically and organizationally), it may come as quite a surprise.

An example of what can happen to a major program involves an exotic rocket fuel commonly known as UDMH (Unsymmetrical Dimethyl Hydrazine). The contractor, a major chemical producer, had been the sole source for the fuel. The process of manufacturing the fuel also produced a toxic carcinogenic byproduct. This condition caused environmental, health, and safety controls to be immediately applied, and when coupled with other conditions in the corporation, forced the manufacturer to terminate production. No alternate source existed nor could one be quickly found. This caused an immediate and serious impact on both DOD and NASA programs, and the UDMH program reverted from the production phase to the development phase of the acquisition process. Through concentrated efforts directed at both short range and long range solutions, the UDMH was available again within nine months and mass production was started within fourteen months. The precarious position of the consumers (DOD and NASA) can

clearly be seen, and environmental regulation appears to have at least precipitated this problem (24:1-3) (25).

At the US Army's Mobility Equipment Research and Development Command (MERADCOM), one of the systems currently under development is the UET, or Universal Engineer Tractor. This is a very flexible item of heavy construction equipment designed to fill the broad needs of the Army's combat engineer units. Late in the process of final acceptance by the Program Manager of the tractor's design (in fact, after all tests except for a reliability checkout), a snag developed. The PM was informed by the two companies providing the UET diesel engine that EPA regulations had resulted in terminating engine production because of its unsatisfactory pollutant levels. The PM was faced with no choice, only a selection of a course of action that would minimize the disruption. The new engine, while approximately equal in power, was of a different design and weight, thereby causing interface problems and vibration effects not experienced with the original engine (29).

In order to properly mate the new engine to the UET, the design cycle had to be reentered and technical redesign accomplished. This of course resulted in a schedule slip; meanwhile, the costs of engineering, management, and support continued at a rate of over $30,000 per month. In the end, this engine substitution cost the UET program nearly one year of time, and well above $500,000 in extra cost. This is particularly significant considering that the UET development program in that phase of acquisition consisted of building four prototype units, funded at about $4 million. Although this is not a large program, the eventual production of the UET is expected to approach 1700 units. The significant delay in

this program can be predominantly attributed to environmental considerations resulting from NEPA and the Clean Air Act (29).

Another system under development at MERADCOM is called FAMECE (pronounced fah-meekey), or Family of Mobile Engineer Construction Equipment. This is a versatile system of construction equipment in which each total unit consists of one common power module and any one of eight work modules. Taken together these two modules comprise either a grader, scraper, compactor, or various other types of equipment, depending entirely on which work module is attached. Each module is weight-limited to 15,000 pounds, or a total of 30,000 pounds for the entire FAMECE unit. This is a hard design specification based on air-transportability requirements (CH-47, C-130, and C-141). Environmental considerations caused design changes in the power module engine. These changes did reduce emissions to an acceptable level, but increased the size, weight, and horsepower requirements of the engine. With an inalterable weight constraint on the FAMECE system, if weight of one component goes up, it must be balanced by a weight reduction elsewhere. Such a trade-off would leave the program manager in this particular case with the possibility of suboptimizing a very desirable coupler design, for example, simply to shave weight added because of environmental considerations (29).

The FAMECE prime contractor also produces construction equipment for export, with some equipment going to France, where noise restrictions are even more stringent than in the United States. It is of interest to learn that this manufacturer found it necessary to remove between 1500 and 2000 pounds of counterweights from a bucket loader to offset weight gains caused by engine muffling, baffling, and other quieting devices

required in France. What then is the future of noise regulation in the United States, and how will it be applied to construction equipment? This is a question of vital concern to the FAMECE PM, since any weight gains must be offset by redesign or component removal in other areas. But the question cannot be answered in a firm, unequivocal way. The outcome is simply another "known unknown" for the PM to contend with. The PM is aware of what might happen, but cannot predict when, how, or even if it will in fact occur (29).

What can the program manager do to cope with such potential problems? In some cases, the PM can only "ride the tiger," and make the best of a poor situation. Ideally however, the PM should look at the system "from the cradle to the grave" environmentally. The design of the system must include inherently environmental considerations. Components to be used ought not to be environmentally sensitive, if possible. Their design should reflect principles proven to be environmentally adequate. The design should minimize the possibility of unwanted spills, fuel venting, and other polluting sources. If they are inevitable, their innocuous effects should be minimized. Could the design be quieter? Does the maintenance of the system require environmentally sensitive equipment, processes, or material? For example, when specifying paint for a system, consider also the paint remover that will ultimately be required to take it off at overhaul. Consider too the process used in removing the paint, and specify a technique that uses minimal amounts of toxic or undesirable substances. Look ahead even to the eventual disposal of the system, since some types may present environmental difficulties even then (18:2) (25).

The PM organization performs the environmental assessment and prepares the Environmental Impact Statement. Especially when the system pushes the state-of-the-art, the PM can expect to spend extra time and effort initially on a fair, concise, but thorough assessment and EIS. Adverse environmental effects that reduce the flexibility of the DOD to site and deploy the system should be avoided, to reduce potential downstream costs, delays, and legal engagements (25).

Considerations such as these are most appropriate early in the design life of a system. They may be relatively minor design issues in the early stages, but represent substantial potential for delays and cost increases during development. They can be absolute work stoppers later in the system's life. The expense (and system downtime) ultimately required to correct a case of environmentally inadequate design or support technique will far outweigh whatever benefits it initially represented (25).

SECTION V

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. The six years since passage of NEPA have been turbulent ones. Industry has strained collectively and individually to meet the environmental standards being imposed. It has had to carefully weigh its social and moral obligations against its economic facts of life. Industry has met the challenge to a fairly large degree. What some would call total success has not yet been achieved because of the dichotomous nature of the problem. Pollution is so widespread, and has been so much a part of American life that the enormity of the problem makes quick (and cheap) solutions impossible. The economics of environmental quality are of major importance to industry, because of the balance needed among its various required expenditures. In spite of this balance, some companies have had to make very large cash outlays, far beyond what they would consider normal or reasonable, just to be able to stay in business and comply with environmental standards. Surprisingly few businesses have been forced to close for such reasons however. Products have been, and will continue to be dropped (or never introduced), and this will maintain a climate of uncertainty for producers and consumers alike.

2. Defense system acquisition management has been affected both directly and indirectly by environmental quality regulation. The costs of defense systems, already under close scrutiny, have been forced upward with the increased cost of doing business in the private sector. Schedules of

defense system procurements have often been held back because of non-availability of the needed basic resources and changes required to manufacturing processes. Performance of systems under development are more than ever before affected by environmental considerations, such as noise, pollutant emissions, and the availability of processes and materials that are environmentally safe. All components of the DOD are subject to the strict EIS requirements which open up environmental impacts to the public eye. This is as it should be, since the harmful effects of a polluting device, aircraft, ship, or vehicle could have long term negative impacts on the nation's environment; if correction after the fact becomes necessary, both the life cycle cost and the operational readiness of the weapon system will suffer.

B. Recommendations

1. That defense system program managers insure early consideration of short term and long term environmental effects of their proposed systems, support equipment, and related procedures. Early and thorough preparation of an Environmental Impact Assessment and Environmental Impact Statement will contribute to this end.

2. That the Defense Systems Management School (DSMS) include an introductory block on the effect of environmental regulation on the program management organization.

3. That if subsequent follow-on studies are pursued in this area by DSMS Program Management Course students, the following guidelines be considered:

a. Restrict the topic to a specific weapon system, commodity, or time frame, or

b. Restrict the area to cover only water pollution, air pollution, noise, or some other specific environmental factor, or

c. Prepare a report in the form of a series of case studies solicited in detail from selected program managers on specific experiences relating to their programs.

APPENDIX A

THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969, AS AMENDED*

An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Environmental Policy Act of 1969."

PURPOSE

SEC. 2. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

SEC. 101. (a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve

*Pub. L. 91–190, 42 U.S.C. 4321–4347, January 1, 1970, as amended by Pub. L. 94–83, August 9, 1975.

and coordinate Federal plans, functions, programs, and resources to the end that the Nation may—

(1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasuring surroundings;

(3) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;

(5) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

SEC. 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall—

(A) Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) Identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropirate consideration in decisionmaking along with economic and technical considerations;

(C) Include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) The environmental impact of the proposed action,

(ii) Any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) Alternatives to the proposed action,

(iv) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program

of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

(i) the State agency or official has statewide jurisdiction and has the responsibility for such action,

(ii) the responsible Federal official furnishes guidance and participates in such preparation,

(iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and

(iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have significant impacts upon such State or affected Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this Act; and further, this subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdiction.

(E) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) Recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) Make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) Initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) Assist the Council on Environmental Quality established by title II of this Act.

SEC. 103. All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

SEC. 104. Nothing in section 102 or 103 shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

SEC. 105. The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

SEC. 201. The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as

the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

SEC. 202. There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, esthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

SEC. 203. The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

SEC. 204. It shall be the duty and function of the Council—

(1) To assist and advise the President in the preparation of the Environmental Quality Report required by section 201;

(2) To gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

(3) To review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;

(4) To develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

(5) To conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

(6) To document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary

data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

(7) To report at least once each year to the President on the state and condition of the environment; and

(8) To make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

SEC. 205. In exercising its powers, functions, and duties under this Act, the Council shall—

(1) Consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order No. 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and

(2) Utilize, to the fullest extent possible, the services, facilities and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

SEC. 206. Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates (5 U.S.C. 5313). The other members of the Council shall be compensated at the rate provided for Level IV of the Executive Schedule Pay Rates (5 U.S.C. 5315).

SEC. 207. There are authorized to be appropriated to carry out the provisions of this Act not to exceed $300,000 for fiscal year 1970, $700,000 for fiscal year 1971, and $1 million for each fiscal year thereafter.

Approved January 1, 1970.

ANNOTATED BIBLIOGRAPHY

BOOKS, PERIODICALS, AND OTHER PUBLICATIONS:

1. Lund, Leonard, Corporate Organization for Environmental Policymaking. New York: The Conference Board, 1974.
   This is report #618, based on a survey of companies involved in pollution abatement. Includes statistical findings and typical organizational charts.

2. Ray, Marvin E., The Environmental Crisis and Corporate Debt Policy. Lexington, Mass: Lexington Books, 1974.
   A discussion of balanced growth and the profit implications of pollution abatement expenditures.

3. Steck, Henry J., "Private Influence on Environmental Policy: The Case of the National Industrial Pollution Control Council," Environmental Law, Vol V, 1975.
   An interesting case history of the rise and fall of the NIPCC, involving corporate input to government environmental decisions.

4. The Sixth Annual Report of the Council on Environmental Quality. US Government Printing Office, 1975.
   An extensive report (763 pages) published yearly by the CEQ on all phases of environmental quality in the US. This is probably the most valuable item of reference material in the report, and serves as an excellent starting point for research into more specific areas.

5. Henry, Harold W., Pollution Control: Corporate Responses. New York: AMACOM, 1974.
   A discussion of formal and informal corporate policies in the area of environment.

6. Environmental Impact Statements: Effects on Program Implementation. Austin, Texas: The University of Texas, 1974.
   Contains some helpful background information on content and disposition of Environmental Impact Statements.

7. Duncan, W. Jack, Decision Making and Social Issues. Hinsdale, Illinois: The Dryden Press, 1973.
   Chapter 4 contains good background reading on decision making and the environment.

8. McCamy, James L., The Quality of the Environment. New York: The Free Press, 1972.
   Good background material.

9. Dorfman, Robert and Nancy S. (eds), Economics of the Environment: Selected Readings. New York: W. W. Norton and Co., 1972.
An excellent reference book which combines readings with quantitative economics.

10. "Trident: Lawsuit Challenges the Navy's Billion Dollar Baby," Science. 13 September 1974.
An account of why the Navy was involved in a lawsuit because of Trident siting decisions.

11. D'Emidio, Captain Joseph A., "The Present and Future Programs of the US Navy in Pollution Control," Pollution Control in the Marine Industries, 1973.

INFORMATION PAMPHLETS:

12. "The Challenge of the Environment: A Primer on EPA's Statutory Authority," US Government Printing Office, 1972.
A basic information document prepared by and about the EPA. Contains much valuable help in understanding EPA's role in pollution abatement.

13. "Preventing Significant Deterioration of Air Quality in Clean Air Areas," US Environmental Protection Agency, January 1976.
A six-page pamphlet outlining the intensified program to prevent new air pollution in areas presently having clean air.

14. "EPA," US Environmental Protection Agency, September 1975.
A short brochure outlining most basic EPA responsibilities and activities.

15. "The Noise Control Act of 1972: Highlights," US Government Printing Office, 1972.
Short brochure describing the Noise Control Act; written soon after its enactment, so no post-passage experiences are included.

16. "In Productive Harmony: A Brief Explanation of Environmental Impact Statements," US Environmental Protection Agency, December 1974.
An excellent brochure summarizing the purpose, contents, and impact of the EIS, and how to prepare them.

17. "Basic Documents Concerning Federal Programs to Control Environmental Pollution from Federal Government Activities," US Environmental Protection Agency, February 1975.
Copies of and excerpts from various acts, Presidential documents, executive orders, and other government documents pertaining to environmental quality.

18. Milias, George W., "Selected Presentations, " Director for Environmental Quality, Department of Defense, 1973.
A compilation of speeches by Mr. Milias while serving as the Director for Environmental Quality for the DOD.

19. Studdard, Gloria J., "Common Environmental Terms: A Glossary," US Environmental Protection Agency, 1974.
A fairly thorough dictionary of terms useful in the environmental area. Very helpful to a beginning research effort.

20. "Finding Your Way Through EPA," US Environmental Protection Agency, July 1975.
An extremely helpful organizational/telephone/room number/ functional directory for EPA. Excellent as a first step in making contacts within the EPA.

REPORTS:

21. Hughes, H. Steven, and S. William Becker, "Directory of Environmental Organizations and Contacts," The Library of Congress Congressional Research Service, October 1975.
A helpful compilation of the various organizations, lobby groups, and contact points in the environmental area in and around Washington, D. C.

22. "Environmental Impact Statement Conference Proceedings," Department of the Navy, March 1973.
This report includes Army and Air Force input, but is primarily a broad and fairly detailed discussion of US Navy experiences with the EIS.

23. "The Macroeconomic Impacts of Federal Pollution Control Programs," A study by Chase Econometric Associates for CEQ and EPA, January 1975.
A background reference which provides better understanding of the national impacts of pollution control expenditures.

OTHER:

24. Unpublished memos on the subject of "UDMH," HQ USAF/LGPM. This data provided a small bit of background on the shortage of UDMH due to economic and environmental considerations.

25. Thompson, Lt Col John P., USAF, Interview at the Pentagon on 17 March 1976.
Lt Col Thompson works in the Environmental Policy Section of HQ USAF (AF/PREVP).

26. Fink, Don. Interview at the Pentagon on 2 March 1976.
Mr. Fink is an economic analyst with the EPA, serving temporarily with the DOD.

27. Clark, Toby. Interview at the New Executive Office Building on 31 March 1976.
Mr. Clark is an environmental analyst with the Council on Environmental Quality.

28. Stevens, Lt Cmdr Joseph M. Interview at EPA on 27 February 1976.
Lt Cmdr Stevens is with the Office of Federal Activities at the EPA, and serves as a liaison with the DOD.

29. Barwick, Bob, and Al Elkins. Interview at MERADCOM (PM/FAMECE), Ft. Belvoir, on 13 April 1976.
Mr. Barwick is the Deputy PM for the FAMECE and UET systems, and Mr. Elkins is in charge of the technical management division.

DEFENSE SYSTEMS MANAGEMENT SCHOOL

STUDY TITLE: THE IMPACT OF ENVIRONMENTAL REGULATION ON DEFENSE SYSTEM ACQUISITION MANAGEMENT

STUDY PROJECT GOALS:

To identify, discuss, and correlate regulatory requirements of the Environmental Protection Agency (EPA) that have an impact on the process of defense system acquisition management.

STUDY REPORT ABSTRACT:

This report outlines major environmental legislation and regulation that applies to defense system acquisition management. Through document research and interviews, the report discusses various effects of environmental regulation on the Defense Department, on defense contractors, and on defense acquisition program managers. Examples of several types of impacts show the importance of thoroughly considering environmental regulation, particularly early in a program. The report can serve as a point of departure for future analysis, research, and case study preparation by DSMS students.

KEY WORDS: Environmental Regulation

NAME, RANK, SERVICE	CLASS	DATE
James L. Graham, Jr., Maj USAF	PMC 76-1	May 1976

STUDY PROJECT PLANNING FORM

41
Graham 19 Mar 76

PARTICIPANT: Maj J L Graham	ADVISOR: Mr Schmidt	Reaffirmed DATE: 19 Mar 76

STUDY PROJECT TITLE: THE IMPACT OF EPA ON DEFENSE SYSTEM ACQUISITION MANAGEMENT

OVERALL PURPOSE OF PROJECT: (What plan to learn and Why)
To understand EPA regulatory requirements and their impact on defense system acquisition management, in order to better cope with them and minimize associated program delays and cost growth; to develop content material for inclusion in PMC instruction, if appropriate.

SPECIFIC STUDY PROJECT GOALS: (to be achieved or questions to be answered)
To identify, discuss, and correlate regulatory requirements of the Environmental Protection Agency (EPA) that have an impact on the process of defense system acquisition management.

STUDY METHODS TO BE USED AND DATA SOURCES:
Survey of literature, periodicals, and reference materials, using the DSMS library and the ICAF library; interviews with cognizant personnel in the EPA, the military services, the Defense Department, and other local organizations. Interviews will be designed to determine basic information from participants, with an unstructured portion to elicit other facts which they feel might be pertinent to this investigation.

Analysis of data inputs will be qualitative, with emphasis on making a systematic presentation of diverse information that could be of use to a Program Manager.

TENTATIVE OUTLINE OF PROJECT REPORT: (Be as specific as possible.)

I. Introduction
II. Background
III. Review of pertinent EPA directives and regulatory requirements.
IV. Discussion/Impact/Examples
(This section will include such areas as cost/budgetary considerations, schedule impacts, and effects on production methods and the organization, particularly applying to contractors.)
V. Conclusions

REPORT OPTION Formal report

KEY MILESTONES: (Update as necessary.)

Develop interview format	Week 5
Document research complete	Week 10
Interviews complete	Week 10
Data Analysis complete	Week 11
First draft complete	Week 12
Report to typist	Week 13
Turn in report	Week 15

(Include schedule to typist.)